

is a little less than that observed at Benares, but the mean temperature agrees almost precisely with the quotation for that place.

TABLE II.—*Summary of Pressure and Temperature.*

Month.	Barometer at 32°.			Thermometer.				Wind.
	Average monthly altitude.	Monthly deviation from annual mean.	Mean diurnal oscillation each month.	Average height with in the house	Mean of daily extremes in the open air.	Monthly deviation from annual mean.	Mean diurnal range each month.	
	inches.	inch.	inch.	°	°	°	°	
Jan.	29.698	+ .308	.111	60.6	60.4	—17.6	19.0	e.w.
Feb.	.575	+ .165	.101	66.4	66.7	—11.3	23.2	W.
Mar.	.479	+ .089	.087	76.3	76.1	— 1.9	23.9	W.
Apr.	.369	— .021	.089	81.6	85.2	+ 7.2	24.1	WE.
May	.252	— .138	.071	83.7	85.3	+ 7.3	19.5	E.
June	.146	— .244	.068	86.0	89.2	+11.2	19.1	E.
July	.125	— .265	.060	84.6	86.7	+ 8.7	12.3	E.
Aug.	.173	— .217	.070	83.2	84.5	+ 6.5	9.8	E.
Sept.	.237	— .153	.085	84.3	85.0	+ 7.0	10.5	E.
Oct.	.445	+ .055	.093	81.5	81.5	+ 3.5	14.7	E.
Nov.	.570	+ .180	.090	78.4	73.8	— 4.2	21.9	E.
Dec.	.614	+ .224	.080	63.6	61.6	—16.4	17.7	W.
	29.390	range 573	.084	77.5	78.0	rang. 28.8	17.9	

VI.—*On the Land Shells of India.* By Lieut. Thomas Hutton, 37th Regt. Native Infantry.

*To the Editor of the Journal of the Asiatic Society of Bengal.*

I have the pleasure to send you a few observations on the land and fresh-water shells of India, which I have had the good fortune to collect since January, 1832, accompanied by specimens, which will serve better than drawings to shew you the species described.

I am sorry I cannot at present offer you a greater number of each, as my collection is not very numerous, but should any of those sent be desirable, I shall have pleasure in collecting for you whenever opportunity may occur.

The same offer I would also extend to the Society, did I think I could be of any use in swelling the treasures of their museum.

Being as yet but a tyro in natural history, and having no works of any great authority by me, I have hesitated in affixing even a generic name to my descriptions, and should these be wrong, I must crave your indulgence and correction\*.

\* We have received Lieut. HUTTON'S Specimens in safety, but have not been yet able to make drawings of them to illustrate his valuable notice: neither have we ventured to alter the generic or specific names given to them by the author, which would require greater knowledge of the subject than we possess. They remain, however, open to any future correction.—ED.

PART 1.—*Land Shells.*Genus CYCLOSTOMA, (*torquata* ?)

Animal unknown to me.

SHELL.—Diameter about  $1\frac{1}{4}$  inch; spire, prominent and pointed; whorls, rounded and six in number; umbilicus, well defined and discovering to the third whorl; aperture circular, margins united, thickened, and reflected: slightly inclined to be angular at the point where the right lip comes in contact with the body whorl; interior of the aperture with a red or deep orange-coloured ring.

Colour of the shell dingy white, with irregular tortoise-shell coloured patches and transverse broken lines on the upper side of the whorls; the under side with longitudinal bands of the same colour, leaving a broad longitudinal white stripe down the middle of the body whorl; operculum horny; concentric lamellar. In some shells the colours are more vivid than in others; I have one in my possession of which the colour is a pale yellowish brown or buff throughout, the markings being very little darker than the ground colour: this however does not appear to have been caused by exposure, as the shell exhibits a very healthy appearance. This is the only specimen with an operculum.

These shells I found at Rajmahl, lying dead among the loose bricks and rubbish by the side of pathways leading among the ruins of the ancient palace. It is probable that they may be found living on the rocks in that neighbourhood, and among the ruins themselves; I had however no time to spare, and was obliged, though reluctantly, to proceed without making farther discovery.

No. 2.—Genus CYCLOSTOMA, (*fasciata* ?)

Animal unknown to me.

SHELL.—Diameter little more than half an inch, or  $5\frac{1}{2}$  lines; whorls five in number, and flattened on the upper side; spire depressed and flattened, even with the whorls; mouth horse-shoe shaped, (not circular,) the margins reflected and partially interrupted by the body whorl, a thin plate alone joining them; colour white, with four or five longitudinal stripes of reddish brown: the first\* or upper stripe being generally the broadest and darkest, and following the whorls from the apex to the margin of the mouth. Umbilicus discovering the third whorl. I have seen no operculum.

These shells I have often found in dry ravines and on the banks of the Ganges, where they were no doubt left by the subsiding waters after the rainy season.

On account of the aperture being horse-shoe shaped, I have placed a mark of doubt to the generic name.

\* In some the second (not the first) stripe is the darkest, &c.

No. 3.—Genus *HELIX* ?

**ANIMAL.**—Dark brown or blackish, with four tentacula, the two superior ones being longest, and bearing the eyes at their summits; tentacula clubbed or forming a button at the tips, retractile; body elongate, with a hooked process on the extremity or tail, pointing backwards: from the right side of the animal proceed two narrow, flat, gradually-pointed filaments or tentacula, which, when the animal is in motion, are kept constantly playing over the surface of the shell, and in all probability give it the high polish it possesses.

**SHELL.**—Thin, fragile, pellucid, with a small pillar cavity, not discovering the previous whorls; whorls six or seven in number; colour pale brownish; shell very glassy, with fine smooth polish; aperture lunated, margins edged and disunited, being interrupted by the body whorl; diameter about one inch; spire flattened, as are also the sides of the shell more or less.

I have placed a mark of doubt to the generic name, because I do not find in the description of the genus *Helix* any allusion made to the process on the tail of my specimen, nor to the two tentacula proceeding from the right side of the animal. I found specimens of these shells, dead, in dry ravines, and on the banks of the Ganges.

They live however in rocky situations, so that their being found in the above-mentioned places must be owing to the mountain streams having carried them off during the rains.

I procured living specimens at Tara, in the range of rocky hills near Mirzapúr, in the month of August, 1832. In wet weather, or more properly speaking, during the rains, they sally forth from their retreats in quest of food, which consists chiefly of vegetable matter. They prefer the early hours of morning to feed in, before the sun has sufficient power to become distressing to them; they appear to require a great deal of moisture, while in motion, without which the slimy matter, which exudes plentifully from their bodies, becomes so thick as to impede the progress of the animal: I observed this to be the case with several which I kept alive for some time; when a few drops of water were sprinkled upon it, the animal put itself in motion, and continued so to do, until the slimy matter became too thick to allow it to proceed without evident exertion. I never found these shells in motion, except on very wet days, and the above circumstance may probably be the reason. At the close of the rainy season, they deposit their eggs in the ground, and retire to some secure retreat, where they remain during the cold and dry seasons of the year, protected from the weather by the dark caves or blocks of stone among which they conceal themselves, shutting up the aperture of the shell with a viscous fluid, which soon

hardens, and becoming like a thick coating of gum, effectually excludes the external air.

The ova are deposited in long strings, and are white.

No. 4.—Genus *BULIMUS*.

SPECIES. *B. acutus* ? Drap. Moll. 77. Also, vide Flemming's British Animals.

ANIMAL.—With four tentacula, bulging and rounded at the summits, and the two longest having the eyes at the tips; body elongate and tapering posteriorly, of a pale colour; the tentacula inclining to pale brown.

SHELL.—Ground colour white, with a longitudinal brown band on the lower side of the body whorl, and many irregular small spots of the same colour; markings of increase distinctly seen; the smaller shells have a tinge of very pale brown in the ground colour; margin of the mouth slightly reflected on the small pillar cavity; whorls eight in number; length  $5\frac{1}{2}$  lines; shell turretted; spire acute; whorls gradually tapering; mouth ovate, longer than broad; right lip edged.

This elegant little shell I first found at a place called Dhuni, in the Jypoor territory, on some large banian trees\* (burgut) overhanging a tank. They conceal themselves during the dry seasons in holes, and beneath the bark, shutting up the mouth of the shell with a brittle gum-like substance, which enables them to adhere to the wood. I found some of this species also at Neemuch during the late rains, on a khujoor tree†, and also on vines in a garden.

No. 5.—*BULIMUS* ?

ANIMAL.—Furnished with four tentacula, retractile, the two upper ones being the longest, and bearing the eyes at the summits; foot elongate, rather rounded posteriorly, truncated before; colour pale yellowish.

SHELL.—Transparent, thin, and pale coloured, or rather colourless; spire gradually tapering; whorls 12; body whorl equal to the two preceding ones; length  $6\frac{1}{2}$  lines‡; aperture longer than broad, semi-ovate; pillar lip straight and slightly reflected; right lip edged.

This delicately formed shell I found beneath a flower pot at Mirzapoor, in September, 1832. They were in great abundance, particularly among the grass growing at the base of the outer walls of my Bungalow. I afterwards found them beneath stones at Futtehpoor Sikra, in December, and also buried deep in the earth with Pupæ at different places in the rocky hills, between Agra and Neemuch. They feed on

\* *Ficus Bengalensis*, vel *Indica*.

† *Phoenix Sylvestris* ?

‡ I have only one of this length, the generality being about five lines. It has also 12 whorls, while the others have about 9 or 10.



vegetables, but appear to have no objection to animal matter also. They bury themselves in the earth, descending foot foremost after the manner of the Pupæ, and remain torpid during the dry season.

I had lately a great number of living specimens in a torpid state, buried in a large glass jar full of earth, in which they had lived eight or nine months; most of these I find however to have died, leaving a string of whitish ova in the shell.

No. 6.—Genus PUPA.

ANIMAL.—With four tentacula, the upper pair being longest, and bearing the eyes at the summits; animal blackish; tentacula bulging at the tips. Ova-viviparous.

SHELL.—About  $7\frac{1}{2}$  or 8 lines long, cylindrical, spire blunt; whorls 9 or 10; aperture roundish or sub-quadrate; margins thickened, and slightly reflected, interrupted by the body whorl, a thin plate intervening. Colour of living specimens, very pale brownish.

The exuvia of these shells is very common in ravines and on banks of rivers, and in these situations the shells are always white from exposure.

They are to be found in abundance in the range of hills between Futtchpoor Sikra, and Neemuch, and it is probable that they are to be met with in the hills near Mirzapoor, and indeed all along that range. They bury themselves deep in the earth, beneath huge masses of rock, the roots of trees, &c. in immense numbers together. They appear indeed to have formed a community, so thickly do they lie upon each other, and to have buried themselves by common consent in a chosen spot. They do not appear to be scattered indiscriminately over the whole rock, but only in selected spots here and there. The aperture of the shell is generally closed with a very thin coat of hardened viscous matter, considerably thinner than fine silver paper.

They appear to be ova-viviparous; I found one shell with four or five young ones in it, all dead, and having 2 or  $2\frac{1}{2}$  whorls. Another with three young ones of three whorls each.

No. 7.—PUPA.

ANIMAL.—With four tentacula, buttoned at the tips, the upper pair longest and bearing the eyes at the summits; colour blackish.

SHELL.—About  $2\frac{1}{2}$  lines in length; whorls 8; spire rather obtuse; colour brown; aperture rounded, margins reflected and interrupted by the body whorl.

The shell is covered over with a coating of mud. These little shells I found at Beana; they were adhering to the face of a bare and very steep rock; the mouth of the shell is stopped up with a viscous fluid similar to the foregoing descriptions, and this enables them to stick to

the rock with such firmness as to render it difficult to detach them without breaking.

I found one or two buried in the earth, among the preceding species.

From their being covered with clay, I was at first inclined to pass them, thinking they were the nidi of some small species of fly. They were scattered over the bleak face of the rock in great numbers.

The "*Bulimus Obscurus*" is said to cover itself with mud in the manner as here mentioned, but it also changes the materials of this coating according to circumstances; for instance, if on a tree, it makes use of bits of lichen to conceal itself, or if on rocks, it uses clay and so on. Perhaps the above species may be found to do likewise.

#### No. 8.—PUPA.

ANIMAL.—With four tentacula, retractile, clubbed at the tips; the superior pair longest, and bearing the eyes. The upper pair of tentacula and a line along the back leading from them are vermilion coloured; the lower tentacula minute, and with the rest of the animal very pale yellow; body elongate, inclining to a point posteriorly.

SHELL.—Thin, vermilion-coloured when living, but diaphanous and colourless when cleared of the animal, cylindrical, obtuse at the summit; whorls seven or eight; aperture rather subquadrate, with four teeth, and corresponding indentations externally; length about three lines; margins of the mouth reflected.

These shells I discovered first at Mirzapoor beneath garden pots, and at the base of the walls of my Bungalow, in company with "*Bulimus*" No. 5, in September, 1832. Their habits appear to be the same; they were however very scarce, and I could only find one or two buried with Pupa No. 6, in the rocks between Agra and Neemuch.

#### No. 9.—Genus *Succinea*.

ANIMAL.—With four tentacula, short and thick; the superior pair bearing the eyes at their *posterior summits*. Colour greenish.

SHELL.—Thin, fragile, diaphanous, and colourless; aperture longer than broad, and ovate; margins edged; lines of increase delicate and distinctly seen; spire prominent; whorls twisting rapidly and four in number. The body whorl forming nearly the whole shell. Length of my largest specimen half an inch.

In form these shells are very like the *Lymnææ*. I found them adhering to the face of the rocks at Beana in December, 1832, along with Pupa No. 7. There was a thin coat of a hard gum-like substance closing the mouth of the shell.

I also found a few buried with Pupæ in the earth.

No. 10.—Genus *AMICULA*.

Species.—*A. Scarabæus*. Lam.

ANIMAL.—Unknown to me.

SHELL.—Ovate, flattened; aperture with seven teeth; right lip edged and white; left lip pale coloured and partially reflected; whorls eight or nine; close. Colour pinkish chesnut, with a few darker marks here and there. Spire short; body whorl large and forming more than two-thirds of the shell; aperture longer than broad and flexuous. Length about seven lines.

I found this specimen on the banks of the Ganges in 1832. But I do not recollect the place, and I made no memorandum of it at the time. It was lying, however, a very little above the water line, on a sand bank. It is the only specimen I have seen.

In “Burrow’s Elements of Conchology,” this shell is described and figured under the Linnæan name of “*Helix Scarabæus*,” in the following manner.

“Shell ovate, two edged, sub-umbilicate; aperture toothed.”

“Specimen brown, variegated with pale spots, outer lip and teeth horny, white; whorls contiguous double convex; aperture narrow, compressed and flexuous; each lip with three teeth; inhabits Asia.”

The plate accompanying this description, and taken from a specimen, at once shews it to be identical with the shell in my possession; but the author errs in saying “each *lip* with three teeth,” inasmuch as his plate and my specimen have only one large tooth on the inner lip, three on the right lip, and (in the plate) two large teeth on the body whorl; my specimen has, besides the two on the body whorl, a very minute one arising near the base of one of them, and which, although not noticed by that author, is still nevertheless a distinct and decided tooth.

La Marck says, it is “seven-toothed.”

Having now given a slight description of each species of land-shells in my collection, I shall, before concluding my letter, mention a circumstance connected with most of them, for which I have not been able satisfactorily to account, nor indeed have I as yet had an opportunity of ascertaining, whether the fact, hereafter mentioned, may be considered as one of the constant habits of the animals, although from the observations I made at the time, I am strongly inclined to think, it may. My attention was first called to the subject, while searching for Pupæ No. 6.

When proceeding in December, 1832, to join my regiment, my route lay, from Futtehpoor Sikra to Neemuch, chiefly through a range of low rocky hills, and observing great numbers of these Pupæ, dead, in ravines and on banks of nullahs, I naturally concluded that living



specimens might be found in the hills, and accordingly whenever our encampment lay within a moderate walking distance, I set forth, after breakfast, with sundry apparatus for digging up and securing whatever prize I might be lucky enough to meet with.

For the first day or two my search for shells was ineffectual, and I returned to my tents tired, and puzzled to account for my bad success, until at last, we encamped between two detached hills. Here I once more commenced a search, which for several hours proved as unsuccessful as before; but the day being cool, and the surrounding scenery very beautiful, I climbed up the rocks and crossed over to the *eastern* side, where I again commenced a search, which in a very short time was rewarded with a more abundant supply of living Pupæ than I had ever thought of obtaining.

These were buried deep in the earth, where they might undoubtedly have remained, safe from prying eyes, had not a little mouse, fortunately enough for me, selected that very spot, whereon to sink its subterranean retreat, and thus unconsciously betrayed the hidden treasures.

The circumstance of these shells being found only on one side of this rock, induced me to go and examine the one on the opposite side of our encampment, and there also I found Pupæ deeply buried in great numbers, but only on the eastern aspect.

From this time I made a point of inspecting the neighbouring hills, whenever within easy distance, sometimes finding no shells, while at others I found them in abundance, and invariably facing towards the E. or S. E. In company with these, I found at different places a few specimens of *Bulimus* (No. 5), Pupæ (Nos. 7 and 8), and *Succinea* (No. 9).

I now began to recal to mind the situation in which I had found *Bulimus* No. 5, and Pupa No. 8, at Mirzapoor, and they also were decidedly only to be found on the S. E. side of my Bungalow; and moreover, I am nearly certain that *Helix*, No. 3, found at Tara, was also on the eastern aspect. Pupa No. 7, and *Succinea* No. 9, as also numbers of Pupa No. 6, were found on the rocks at Beana, facing to the same direction; and *Bulimus* No. 4, although a few were found elsewhere, were by far more numerous on the eastern side of the trees, than on the others; and this also I observed at the commencement of the rainy season at Neemuch.

Having therefore satisfied myself that all the living species of land shells, which I have collected, were found *on* or *nearly on* the same aspect, viz. eastern or S. E.; it only remains to ascertain the cause of such partiality, and as this is most probably connected with the welfare of the animal, it may be concluded that the all-wise Director of nature has imparted an instinct to these tender beings, which enables them to choose the



situation most favourable to their wants and safety. May not, therefore, the fact of their being found on the eastern aspect of the rocks and trees be accounted for, by supposing it to originate in a desire to find shelter from the western blast during the dry heats of summer, and to be in a situation to enjoy the first refreshing and invigorating showers of the rainy season?

I have put the above as a query, because I am not certain that the rains prevail from the eastward or south-eastward, although at this station they have certainly done so this year. I shall however take every opportunity of ascertaining, whether the above is a constant habit of the land shells or not, and in this I hope I shall be assisted by others of your correspondents who may be willing to pay attention to the subject.

#### PART 2.—On the Fresh-water Univalves.

##### No. 1.—Genus AMPULLARIA.

AMPULLARIA.—Found in jheels; Mr. BENSON's description of the animal, as far as I have been able to ascertain, is perfectly correct. Operculum calcareous?

*Var.* With longitudinal brown bands; found with the last, in jheels at Mirzapoor.

I have one large specimen with stripes, which is indeed the only one I have seen, but the young ones are very commonly met with. Operculum calcareous.

##### No. 2.—PALUDINA, *Bengalensis*?

This is a very common shell, occurring plentifully in most jheels and stagnant nullahs. In the Jegu nullah at Chunar they are in abundance, but the first specimens I procured at Humeergurh near Nee-much, in a large jheel. The animal is beautifully studded over with black and orange coloured spots. It is ova-viviparous; from one I obtained 102 young ones. Length of the shell from  $1\frac{1}{2}$  to 2 inches. The young have a ridge or keel on the body whorl, which makes the aperture sub-triangular; this is lost in the mature shell.

The umbilicus of the shell varies much in different specimens, some shewing scarcely any, while others have it very well defined and rather deep.

The shell is covered with an olive-green epidermis and longitudinally striped with brown; on the body whorl these stripes are nine in number, and are placed alternately, a narrow one and a broad one. Operculum corneous.

##### No. 3.—PALUDINA.

In jheels and stagnant nullahs.

This has a broad brown band running longitudinally from the apex to the aperture.

The young are keeled like those of the last species. Length about one inch—aperture with a bleak horny rim. Operc. corneous.

No. 4.—PALUDINA.

Found in a large jheel near Chunar.

The spire very much corroded. Colour pale olive-green. Aperture with a black horny rim. One of these produced 27, and another 87 young ones; they have the ridge and the sub-triangular aperture when young. Length from nine lines to an inch. Animal orange and black. Operc. corneous.

No. 5.—PALUDINA.

Found in the Jegu nullah at Chunar.

Shell solid and thick, pale green, interior white. Little more than an inch in length. Operc. corneous.

No. 6.—PALUDINA.

Found in a very large jhil near Chunar. Colour dark olive-green, and longitudinally striped with 10 black stripes, alternately narrow and broad. Spire corroded; margins of the mouth with a horny rim. This shell is more globular than any I have seen, belonging to the Genus Paludina. I have only two of them, and the animal is unknown to me. Operc. corneous.

No. 7.—VALVATA ?

This is the shell of which a description appeared in the 9th No. of the Journal, under the head of Notes on the Habits of the Paludina.

These shells differ much in the development of the umbilicus, some having it well defined, others having scarcely any. Operc. calcareous.

This I found at Mirzapoor, at the foot of trees, in puddles of water.

No. 8.—VALVATA ?

These I have seen in abundance on the banks of the Ganges and nullahs, but always dead and injured from exposure to the sun. The only living ones I have seen, I found at Dhuni in the Jypoor territory, under a wall enclosing one side of a dirty tank. The spire of these is not corroded like the last species, nor has it any umbilicus; aperture angular above and below. Operc. calcareous.

No. 9.—VALVATA ?

Found with No. 7, at Mirzapoor.

The aperture only *angular above*.

No umbilicus. Operculum calcareous.

No. 10.—PLANORBIS, *Corneus* ?

These may be found in almost every jheel or stagnant piece of water. Like all the fresh-water univalves, they bury themselves in the mud, as the water evaporates during the hot seasons of the year. I brought a lump of dry clay from the bed of a jheel at Mirzapoor, to Neemuch, and

having kept it for a year, I found on immersing it in water, that the shells imbedded in it, were still alive and healthy. Diameter  $\frac{3}{4}$  inch.

No. 11.—VAR.? PLANORBIS.

These I brought from Mirzapoor, and have marked them as a variety, on account of their form being more regular, than the last; they were found plentifully, and may probably prove the young of Planorbis No. 10.

No. 12.—PLANORBIS.

The whorls in this species are very much flattened.—The aperture opening obliquely and oval—shell thin and diaphanous—whorls 4 or 5 in number—diameter  $3\frac{1}{2}$  lines.

The exuvia common on the Ganges.—They are found in stagnant waters—more frequently in nullahs than in jheels.

No. 13.—PLANORBIS.

Animal blackish. The shell minute, of three or four whorls, which are rounded; aperture oblique; diameter about  $1\frac{1}{4}$  line.

These very small shells I found during the hot winds of 1833, in the earthen pans containing the water for my tatties. They were drawn from a *well* in my compound, the bottom of which is hard trap-rock, and also from one other well near my house. How they got into these wells I cannot conceive, as there is no nullah or pond near them. They were not abundant.

No. 14.—MELANIA.

These I found on the banks of the Ganges among exuviae. They are injured by exposure to the sun. They inhabit rivers.

No. 14.

A smaller size. These appear to be the same as the foregoing. I obtained them during the hot winds, from the same *well* in which the small Planorbis, No. 13, was taken. This is a curious fact, as the bottom of the well is hard trap-rock, and unless the animals burrow into the *sides* of the well, they cannot possibly find protection at the bottom of it. In this well there is no true spring, it being supplied merely by the water soaking down from the surface during the rains.

No. 15.—MELANIA.

I have one specimen, which was given me by a friend of Mr. BENSON's, from whom he obtained it. The epidermis is dark olive green. Shell 2 inches long. The body whorl longitudinally tuberculated.

No. 16.—MELANIA.

This species, of which I have only one specimen, is of a blackish colour. Transversely wrinkled on the whorls. Length  $1\frac{1}{4}$  inch.

This I found in a nullah at Chunar, which with the exception of the rainy season, at which time it joins the Ganges, is strictly "*stagnant water*." The animal was alive, and in soft mud.

I mention this circumstance, because Mr. BENSON has said in No. 13 of the GLANINGS IN SCIENCE, when speaking of Melaniæ, "I have never met them in jheels or standing waters, so that they may be strictly called fluviatile."

I have not yet had an opportunity of procuring any of these shells alive, from rivers: the only two living specimens in my collection were taken—the one from a muddy nullah, the other from a well.

No. 17.—LYMNÆA.

Shell thin, fragile, diaphanous.

Found in abundance in the Jegu nullah at Chunar, also in most jheels.

*Fresh-water Bivalves.*

No. 18.—UNIO?

Found in nullahs at Chunar; also in tanks. Length of my largest specimen  $2\frac{1}{2}$  inches; epidermis greenish brown; beaks decorticated. Interior, beautifully nacreous.

No. 19.—UNIO?

Found at Chunar in nullahs and tanks. Beaks decorticated; epidermis dark-brown. These shells are generally tuberculated interiorly, presenting an appearance of small pearls. The pearly texture of the interior is often coloured with a pinkish tinge.

No. 20.—UNIO?

In rivers, nullahs, and tanks. Plentiful in the Jegu nullah at Chunar. Epidermis yellowish or pale brownish green. Beaks naked. More solid than the preceding, and the interior lustre more brilliant.

No. 21.—UNIO?

Can this be the young of Unio No. 18?

I found them frequently in small pools of water, left in the hollows of sand-banks on the Ganges; they are easily traced by the tortuous furrows which they leave on the sand. They are very slight, and the interior appears to be satiny.

No. 22.—CYCLAS.

Epidermis olive-brown, and in some, of different shades of olive-green. Transversely furrowed; beaks sometimes pale purplish, sometimes decorticated.

Found in the Ganges and other rivers.

No. 23.—VAR.

Epidermis pale yellow, or dirty straw-colour.

In the Ganges at Mirzapoor.

No. 24.—VAR.

Some specimens brownish, others pale yellowish, with longitudinal rays or stripes of brown.

At Mirzapoor in the Ganges.



## No. 25.—NOVACULINA GANGETICA—Benson.

Found at Mirzapoor in the Ganges.

On stormy days, I generally found plenty of them.

*Note to the Editor.*

These are all I have yet collected.

I have sent a few of each kind, except Nos. 10 of the Land Shells, and 6, 15, 16, and 25 of the Fresh-water Shells. Of some of those sent I have so very few that I could only spare one or two, without making my cabinet very bare. The poorness of the specimens therefore I hope you will excuse for the present, and should you not already possess sufficient, I shall have pleasure in sending more whenever lucky enough to fall in with them.

Should any part or the whole of the present communication be too trifling for the pages of your Journal, do not hesitate an instant in rejecting it. My object in writing, not being for the sake of *seeing myself in print*, but for the purpose of communicating facts, in the cause of truth.

*Neemuch, 20th October, 1833.*

*List of Land and Fresh-water Shells\*.*

<i>Land Shells.</i>			
1. Cyclostoma, (mihi) torquata?		8. Valvata?	.....
2. ———? (mihi) fasciata?		9. ———?	.....
3. Helix,..... (mihi) petrosa?		10. Planorbis, ....	corneus?
4. Bulimus, ....	acutus?	11. Var. ———?	..... var.
5. ———? .. (mihi) gracilis?		12. ———, ... (mihi)	compressus.
6. Pupa, ..... (mihi) cylindrical?		13. ———, ..	.....
7. —, ..... (mihi) cœnopicta?		14. Melania, .....	
8. —, ..... (mihi) bicolor?		15. ———, .....	
9. Succinea? ....	oblonga?	16. ———, .... (mihi)	
10. Auricula Scarabæus, Scarabæus, Lam.		17. Lymnæa, ..	limosa?
<i>Fresh-water Univalves.</i>		<i>Bivalves.</i>	
1. Ampullaria, ....		18. Unio?	.....
Var. .... (mihi) striata?		19. ———,	.....
2. Paludina, .....	Bengalensis?	20. ———,	.....
3. ———, .....		21. ———,	.....
4. ———, .....		22. Cyclas, ....	.....
5. ———, .....		23. ———,	.....
6. ———, .....		24. ———, ....	.....
7. Valvata? .....		25. Novaculina Gangetica, } Gangetica.	
		BENSON, .....	

The specific names are given in my cabinet to enable me to distinguish them, and I have here inserted them, for the sake of reference should you notice them. Those marked (mihi) I have myself given. The others are those of Authors, and given where I thought they belonged.

\* When we are able to furnish a plate of these shells, the present figures of reference shall be preserved.—ED.